

REMARKS

This paper is in response to the non-final official action dated November 2, 2007, wherein: **(a)** claims 1-13 were pending; **(b)** claims 1-13 were rejected under 35 USC § 103(a) as obvious over Kikuchi U.S. Patent No. 6,353,582 ("Kikuchi") in view of Nakano et al. U.S. Patent No. 6,498,776 ("Nakano"); **(c)** claims 1-13 were rejected under 35 USC § 103(a) as obvious over Kikuchi in view of Matsui U.S. Patent No. 7,042,826 ("Matsui"); **(d)** claims 3 and 9 were rejected under 35 USC § 112, ¶ 2 as indefinite; and, **(e)** the specification and claims were objected to due to informalities.

Reconsideration and withdrawal of the rejections and objections are respectfully requested in view of the foregoing amendments and following remarks.

I. Brief Summary of the Amendments to the Claims

Claims 1 and 7 have been amended to incorporate the limitations of claim 6 and 12, respectively. Accordingly, claims 6 and 12 have been canceled. Claims 1 and 7 have been further amended to recite that the substrate is interposed between the planar surface of the solid immersion lens and the signal recording surface, and

"an air gap control unit for maintaining a distance between the solid immersion lens and the optical recording medium, independent from the focus control signal generated from the focus control unit,

wherein the beams from the beamsplitter enter the solid immersion lens, and are then focused through the substrate onto the signal recording surface."

No new matter has been added.

Claims 3 and 9 have been amended for clarity so that the recited equations include an equality sign. Support for these amendments may be found, for example, at p. 6, lines 24-34 of the application as filed. In view of

these amendments, the applicants respectfully request reconsideration and withdrawal of the indefiniteness rejection.

II. The Objections to the Specification and Claims

The specification and claims were objected to due to the presence of copying informalities (e.g., faded portions limiting the legibility of certain passages). The action accordingly requested a clean copy of the specification and claims. See p. 2 of the action.

The applicant has reviewed the PTO's electronic PAIR entry for this application and notes that *two* complete copies of the application are of record as of the filing date of August 20, 2004: one copy that contained the noted faded portions and a second copy that was free from any copying informalities. In any event, the applicant resubmits herewith a clean copy of the originally filed application to be fully responsive to the official action.

In view of the foregoing, the applicant respectfully requests reconsideration and withdrawal of the objections to the specification and claims.

III. The Obviousness Rejection Based on Kikuchi and Nakano Is Traversed

Claims 1-13 were rejected as obvious over Kikuchi in view of Nakano. See p. 3-6 of the action. The applicants respectfully traverse this rejection. Reconsideration is requested.

Kikuchi is directed to an optical pickup device. A first disclosed embodiment of an optical pickup device generally includes (in the order that light travels through the device): a light source 11, a beamsplitter 12, a collimator lens 13, an objective lens 14, an optical disk 15, and a photodetector 20 (for light reflected from the optical disk 15). Kikuchi, col. 2, line 61 to col. 3, line 14 and Fig. 1. An error signal generated by the photodetector 20 is used by a drive circuit 40 to adjust the position of the collimator lens 13. Kikuchi, col. 4, lines 9-12. A second disclosed embodiment of an optical pickup device generally includes (in the order that

light travels through the device): a light source 51, a collimator lens 52, a beamsplitter 53, compensating lenses 54 and 55, an objective lens 56, an optical disk 57, and a photodetector 60 (for light reflected from the optical disk 57). Kikuchi, col. 6, line 59 to col. 3, line 9 and Fig. 9. An error signal generated by the photodetector 60 is used by a drive circuit 67 to adjust the position of the compensating lens 55. Kikuchi, col. 7, lines 55-58.

Nakano is generally directed to a near-field light-emitting element and optical head. The disclosed optical head 10 generally includes (in the order that light travels through the device): a laser source 11, a coupling lens 12, a mirror 13, a polarizer 16, a convergent lens 14, a solid immersion lens 15, and an optical disk 1. Nakano, col. 3, lines 1-33 and Fig. 1.

The action asserts that it would have been obvious to use the solid immersion lens of Nakano as an objective lens in the optical pickup device of Kikuchi. See p. 4 of the action.

However, even if combined as suggested in the action, the combination of Kikuchi and Nakano fails to teach or suggest all recited limitations of independent claims 1 and 7.

Claims 1 and 7 each recite “an air gap control unit for maintaining a distance between the solid immersion lens and the optical recording medium.” The action relies on Nakano for this limitation, asserting that an air gap control unit is “inherently present in a near-field lens system when gap is controlled,” and citing Nakano at col. 4, line 36 to col. 5, line 15. See p. 5 of the action. The applicant respectfully submits that Nakano nowhere discloses, teaches, or suggests that the air gap distance between its solid immersion lens and optical disk is maintained at a desired value to compensate for thickness variations in successive optical disks. The cited passage of Nakano discloses length measurements related to slit widths in the solid immersion lens (i.e., 200 nm) and a distance at which a representative transmittance intensity is computed (i.e., 30 nm), but is unrelated to the air gap distance between the solid immersion lens and the optical disk. See Nakano, col. 4, line 36 to col. 5, line 15.

Additionally, claim 1 recites “a position adjustment unit, connected to the light source or the collimated lens,” while claim 7 similarly recites “a position adjustment unit, connected to the light source.” The action relies on the drive circuits 40 and 67 of Kikuchi for this limitation. See p. 4 of the action. However, neither of the two embodiments disclosed by Kikuchi teaches or suggests the particular structure recited in the claims. As an initial matter, neither of the disclosed drive circuits is connected to a light source (i.e., as recited in claim 7). Further, while the drive circuit 40 adjusts the position of the collimator lens 13, the collimator lens 13 is *not* interposed between the light source 11 and the beamsplitter 12 (i.e., as recited in the first three limitations of claim 1). Similarly, the drive circuit 67 adjusts the position of the compensating lens 55, and is *not* connected to the light source 51 or the collimator lens 52 (i.e., as recited in claim 1).

The claims generally recite an optical pickup apparatus having a solid immersion lens whose planar surface faces a substrate of an optical recording medium. Light passing through the solid immersion lens is focused through the substrate onto a signal recording surface of the optical recording medium. Therefore, the recited optical pickup apparatus includes both a position adjustment unit *and* an air gap control unit to combine the advantages of (1) reducing the light spot size of the focused light, (2) protecting the signal recording surface, and (3) compensating for normal substrate thickness variations during manufacturing. By utilizing both control units in the same device, the resulting optical pickup apparatus is more versatile than conventional devices because the position adjustment unit can compensate for substrate thickness variations, while the air gap control unit can maintain the distance between the solid immersion lens and the optical recording medium in a near-field limit.

Additionally, claims 1 and 7 recite that the substrate is interposed between the planar surface of the solid immersion lens and the signal recording surface, and

“an air gap control unit for maintaining a distance between the solid

immersion lens and the optical recording medium, independent from the focus control signal generated from the focus control unit,

wherein the beams from the beamsplitter enter the solid immersion lens, and are then focused through the substrate onto the signal recording surface.”

The elements of claims 1 and 7 allow compensation for the thickness deviation of the substrate. According to the recited elements, the position adjustment unit may respond to thickness variation of the substrate, while the air gap control unit may maintain the distance between the optical pickup apparatus and the optical recording medium in a near-field limit.

In view of the foregoing, the applicant submits that the combination of Kikuchi and Nagano fails to teach or suggest all recited elements of claims 1 and 7 (i.e., lacking *both* the position adjustment unit *and* the air gap control unit). Further, the cited combination also fails to recognize the advantages resulting from the use of both control units.

Accordingly, the applicants respectfully request reconsideration and withdrawal of the obviousness rejection based on Kikuchi and Nagano.

IV. The Obviousness Rejection Based on Kikuchi and Matsui Is Traversed

Claims 1-13 were rejected as obvious over Kikuchi in view of Matsui. See p. 6-9 of the action. The applicants respectfully traverse this rejection. Reconsideration is requested.

The present application is the U.S. national phase application of International Application No. PCT/KR03/00350, filed February 20, 2003, which in turn claims priority to Korean Application No. KR 10-2002-0009877, filed February 25, 2002. Accordingly, the present application is entitled to a U.S. filing date of February 20, 2003. See MPEP 1810 and 35 USC § 363.

Matsui was filed on March 4, 2002, first published on September 26, 2002 (as U.S. Publication No. 2002/0136147), and was patented on May 9, 2006. Accordingly, neither Matsui nor its corresponding publication qualifies

as prior art under 35 USC § 102(a) or (b). Thus, Matsui is only potentially available as a reference under 35 USC § 102(e) as of its filing date of March 4, 2002.

The applicant traverses the rejection over Kikuchi in view of Matsui on the basis that Matsui is not prior art. Specifically, Matsui's § 102(e) reference date (i.e., March 4, 2002) is not before the invention of the present application, as evidenced by the foreign priority claim to the earlier-filed KR 10-2002-0009877 (i.e., February 25, 2002). In support of this assertion, the applicant submits herewith an English translation of KR 10-2002-0009877. See MPEP 706.20(b). The applicant further states that the provided translation of KR 10-2002-0009877 is accurate. See 37 CFR 1.55(4)(ii).

Accordingly, the applicants respectfully request reconsideration and withdrawal of the obviousness rejection based on Kikuchi and Matsui.

CONCLUSION

In view of the foregoing, entry of the amendments to claims 1, 3, 7, and 9, cancellation of claims 6 and 12, reconsideration and withdrawal of the rejections and objections, and allowance of claims 1-5, 7-11, and 13 are respectfully requested.

Should the examiner wish to discuss the foregoing, or any matter of form or procedure in an effort to advance this application to allowance, the examiner is urged to contact the undersigned attorney.

Respectfully submitted,

MARSHALL, GERSTEIN &
BORUN LLP

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James P. Zeller (Reg. No. 28,491)
Attorneys for Applicant
6300 Sears Tower
233 South Wacker Drive
Chicago, Illinois 60606-6357
Telephone: (312) 474-6300